PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BCHydro

BRITISH
COLUMBIA

Fisheries Program
Annual Report 1992/93

B. G. Blackman
April 2000

PWFWCP Report No. 217

105-01589/

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

Citation: B. G. Blackman. April 2000. Fisheries Program annual report 1992/93. Peace/Williston Fish and Wildlife Compensation Program, Report No. 217. 8pp.

Author(s): Brian G. Blackman[1]
Address(es): [1] Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave., 3rd Floor Prince George, B.C. V2L 3H9

PEACE / WILLISTON FISH AND WILDLIFE COMPENSATION PROGRAM

FISHERIES PROGRAM
ANNUAL REPORT
1992/93

STEERING COMMITTEE

R. Krehbiel (chairman)	M.E.L.P.
H. Andrusak	M.E.L.P.
Z. Hawthorn	B.C.H.
K. Child	B.C.H.

FISHERIES TECHNICAL COMMITTEE

D. Ableson (chairman)	M.E.L.P.
T. Down	M.E.L.P.
H. Smith	B.C.H.
O. Fleming	B.C.H.

FISHERIES PROGRAM STAFF

B. Blackman	M.E.L.P.
A. Langston	B.C.H.
A. McLean	B.C.H.

PROGRAM ADMINISTRATION

B. Blackman and A. Langston have continued as full time biologists and A. McLean has provided technical support. The staff are responsible for planning, administering, managing and conducting research and enhancement projects within the Fisheries section of the Peace/Williston Compensation Program. Members of the Steering Committee this year were, from B.C. Hydro, K. Child and Z. Hawthorn and from B.C. Environment H, Andrusak and R. Krehbiel (Chair). Members of the Fisheries Technical Committee were O. Fleming and H. Smith (B.C. Hydro) and D. Ableson (Chair) and T. Down (B.C. Environment). K. Ashley (B.C. Environment) was Technical Advisor.

Administrative duties of the project biologists included preparation of the Annual Report, Quarterly Reports, project accounting and contract management.

PROGRAM PLANNING

Two technical meetings were held this year to discuss current years projects and to prepare a budget for the 1995/96 fiscal year.

PUBLIC CONSULTATION

Presentations and Meetings

Approximately 180 people attended the four open houses held in Ft. St. John (40), Chetwynd (20), Mackenzie (55) and Prince George (65). Program biologists, Steering Committee and Technical Committee members were available for informal discussions.

Meetings were held with the Spruce City Wildlife Association and the Mackenzie Fish and Game Association to discuss club involvement program structure and ongoing projects.

Compensation staff displayed an exhibit of the Compensation Programs projects at a local mall in Prince George for Environment week.

Natureline/Information Dissemination

The third and fourth issues of Natureline were released in Octoberl9/92 and Mar1993. Ongoing fisheries projects were featured as well as a budget summary, an explanation of the project selection process and a section on general information on the fish and wildlife species present in the Williston watershed.

Program staff have responded to public feedback from previous consultation activities. For example, as a result of public concern in both Hudson's Hope and Mackenzie over the decline of Arctic grayling populations regulation changes have been implemented to reduce the harvest, and letters have been written to the B.C. Environment habitat section and the Forest Service emphasising the importance of habitat protection for the remaining populations. Twenty five thousand dollars was spent on projects directed specifically towards Arctic grayling in 1992/3. The Mesilinka River was chosen for a stream

fertilisation pilot project, in part to evaluate the effects of stream fertilisation on Arctic grayling. Participants at the openhouse voiced an interest in getting more information regarding program expenditures, administration costs, budgets etc. A summary of budget expenditures was presented at the openhouse in 1992/3 and more detailed information is given in this report.

PROJECT SUMMARIES

METHODS DEVELOPMENT

1. Kokanee Model:

Objective: Develop a computer simulation model for kokanee in Williston Reservoir to help aid in management decision making and information gathering.

This is the final year of a three year contract to develop a kokanee computer model. The total cost of the project has been $51,000. There was a significant input of time on this project by E. Parkinson, Fisheries Research Section MELP, which should be acknowledged. The contract was administered by T. Down, Fisheries Section head Ft. St. John.

This model will help aid management decisions and information gathering in order to facilitate the management of the kokanee population in the reservoir. The project has been completed including some sensitivity analysis.

2. Dinosaur Lake Enhancements Review:

Objective: Evaluate existing data and determine what enhancement options are possible in a run of the river reservoir, specifically Dinosaur Lake.

The report suggests several enhancement options to reduce entrainment, increase rearing habitat in the reservoir and to improve spawning habitat.
These options include:

a) Pen rearing to reduce entrainment
b) Artificial structures (either floating or on the bottom) to provide rearing habitat.
c) Johnson Creek watershed restoration, transplanting bull trout above the falls on Gething Creek or creation of an artificial spawning channel to improve spawning potential.

3. Arctic Grayling Enhancements Review:

Objective: This contract was designed to determine:

a) What enhancement and management options are available for Arctic grayling?
b) What activities have been used in other areas, which activities have been successful which have failed and why ?
c) What are the long term ramifications of enhancements and which are appropriate in the Williston watershed.

The report did not recommend any specific enhancement projects but did suggest that the successful management and enhancement of grayling in the Williston watershed will demand an aggressive approach on four fronts:

a) Filling gaps in the understanding of basic grayling biology both locally and regionally;
b) Limiting negative impacts of development and resource use on grayling habitat;
c) Applying the most promising management and enhancement practices on grayling populations, habitat, sport fisheries in an adaptive and experimental manner;
d) Providing the public with meaningful and exiting opportunities to understand grayling and appreciate their habitat.

4. Embayment Enhancement Feasibility Study:

Objective: Conduct a literature review and evaluate the feasibility of potential embayment enhancements.

This contract suggests that foreshore planting (establishing vegetation in the drawdown zone) probably has the best enhancement potential and would be very beneficial to fish stocks utilizing embayment areas. However, no studies have been conducted at northerly latitudes and therefore the report recommends small scale pilot projects to test the survivability and methodologies for introductions of various plant species in the drawdown zone.

Other options that were discussed include artificial reefs, substrate and structures, fertilisation, stocking, tributary improvements, species introductions and cove culture.

ENHANCEMENTS

5. Stocking Program:

Objective: Provide fish for various projects and management objectives.

Rainbow trout releases included, 113,000 into fourteen small lakes, 16,000 Blackwater rainbow trout into Carbon Creek and 26,000 Gerrard rainbow trout released into the Nation Lakes. Nation R., Carbon Ck, Dunlevy Ck and Manson R were stocked with 453,000 kokanee. Four small lakes were stocked with 50,000 brook trout.

6. Nation River Arctic Grayling Transplant:

Objective: Create a genetic reserve in a barren headwater lake for Arctic grayling stocks from the Nation River and gather life history information on sport fish stocks from that system

One week of angling produced a catch of 84 Arctic grayling, however, 26 of these fish died in holding and transport the remaining 58 fish were transplanted into Little Calais Lake. The high moralities were attributed to severe and rapid fungal attacks brought on

by excessive handling, high water temperatures and limited flow through the holding pens. Life history data on Arctic grayling and rainbow trout was gathered as part of a transplant project.

The number of fish transplanted was deemed insufficient to provide a good genetic base for a population and so a similar project is planned for 1993/94. Fish handling and holding procedures will be dramatically altered to prevent the high mortality rate experienced during this project.

7. Summit Lake Stocking Evaluations:

Objective: Evaluate the effectiveness of the stocking and net pen rearing program in Summit Lake through a creel survey and gill netting program.

This lake is dominated by other types of recreational use and as a result, there was very little angler effort and no rainbow trout was captured.

A one week long gill netting program was conducted but failed to capture any marked fish, in fact very few rainbow trout were captured. As a result of this study the pen rearing (in co-operation with the Summit Lake Community Association) and stocking programs have been terminated.

8. Dina Creek Habitat Improvement:

Objective: The objective of this project was to provide a high quality spawning area for rainbow trout released into Dina Lake #1.

This co-operative program with the Mackenzie Fish and Game Association was initiated with approximately 200 hours of volunteer labour. Up to six hundred spawners were counted in the stream and there was very extensive viewing.

Additional funds were authorised by the Technical Committee and rip rap was stock piled on site in preparation for the 1993/4 program. The Mackenzie Fish and Game Association will be providing additional funding and labour for the 1993 project. In addition to stream improvement work, the club assisted in stocking 8,000 rainbow trout into Dina Lake's # 3 and #7, barren lakes in the Dina system.

9. Windy Point Enhancement:

Objective: Construct an pilot upwelling station to relieve a chronic spawning bound problem in a small stocked lake.

Installation of the upwelling spawning station has been completed. In the spring of 1993 water will be pumped through the grid to determine if the upwelling station will induce the fish to spawn. If the project is successful a pumphouse will be constructed and a permanent pump will be installed.

10. Mesilinka \ Nation River Stream Fertilisation:

Objective: Increase fish production through nutrient stimulation of the algae-insect-fish food chain.

This year baseline data was gathered in order to allow the evaluation of the project in the future, and to determine the amount of fertiliser that will be required to stimulate production. Data was gathered on water chemistry, temperature and flow, insect populations and fish species, numbers and growth rates.

11. Carbon Creek Side Channel:

Objective: A lack of good spawning habitat (poor substrate and extreme floods) has been identified as a key factor limiting production in this system, In order to improve this situation, several potential side channel areas were surveyed.

A groundwater fed side channel was located and detailed surveys were conducted. A channel design was formulated, reviewed by engineers with expertise in this field and modifications were made based on their recommendations. A construction schedule, and cost estimates were developed and verified. Materials for construction were located and all the appropriate permits were obtained. However, due to of the uncertainty of the groundwater supply and limited outside funding no construction was completed this year.

12. Gantahaz Lake Enhancement and Assessment:

Objective: Gantahaz Lake near Mackenzie, has been stocked for many years with brook trout and supports a high use recreational fishery. A stock assessment, conducted on this lake, indicated that there could be a spawnbound problem, which would result in poor angler catches.

In September 1992, gravel was placed along the shoreline of the lake to provide additional areas for spawning. A winter creel survey was conducted to determine the effectiveness of the stocking program.

INVENTORY AND ASSESSMENT

13. Manson River Inventory:

This project was cancelled because of the "Donna Creek Slide" which deposited tons of silt and debris into the system.

14. Tomias and Carina Lakes Lake Trout Investigations:

Objective: Gather additional lake trout life history information, and to collect mercury and disease samples for analysis.

In order to collect proper disease samples post-spawning fish are required. This year, cold temperatures (-30°C) in mid October resulted in the lake freezing immediately after the crew arrived and no samples were collected.

15. Small Lake Inventory:

Objective: Identify and evaluate enhancement opportunities on small lakes.

Small lake inventories were conducted on five small lakes and enhancement opportunities were identified for each lake. The survey on one small lake was not completed because of an equipment failure.

16. Stocking Evaluation of Carbon Creek and Dunlevy Creek:

Objective: Evaluate the effectiveness of stocking Blackwater rainbow trout in establishing a river and embayment fishery.

Very low numbers of marked fish have remained in Carbon Creek one year after stocking. The few fish that have remained appear to have exceptionally good growth rates, but it is assumed that most of the fish have moved to the reservoir. Spring water levels were too high to allow an effective spawner evaluation.

The fish released into Dunlevy Creek appear to have remained in the stream, many for at least two summers, rather that recruit to the reservoir.

Thorough evaluations conducted in the spring of 1992 found no stocked (marked) fish spawning in Dunlevy Creek, but there were moderate numbers of small (15-20 cm) marked fish rearing in the river.

17. Gething Creek Inventory:

Objective: Determine if the habitat in Gething Creek is suitable to support a bull trout population.

This inventory, conducted under the direction of T. Down, was partially completed at a preliminary level. The habitat of Gething Creek was determined to be suitable for sport-fish but none were found upstream from a barrier falls. Results from this inventory have provided data to support a transplant of bull trout into the barren upper watershed.

18. Moberly River Inventory:

Objective: Collect biophysical and life history data and identify enhancement opportunities.

Moberly River was surveyed and a data report has been completed. Bull trout and rainbow trout were found throughout the system but never at the same sites. Good Arctic grayling habitat was available but no grayling were found. Many of the sites provided good fish habitat but no fish were found. Beaver activity on a number of tributaries was noted as potentially blocking fish movement.

19. Pine River Inventory:

Objective: Collect biophysical and life history data and identify enhancement opportunities.

The Pine River was surveyed and a data report has been completed. Bull trout and rainbow trout were found together at a number of sites. No Arctic grayling were found and a number of sites were found that had good recreational fisheries potential but no sport fish species were present.

20. Cameron River Assessment:

Objective: A contract was tendered to evaluate the enhancement potential, determine the extent of beaver activity and estimate the costs and potential benefits of beaver dam removal in this system.

The contract has been completed, and a report has been produced. Maps have been produced which show the location of the beaver dams, and an analysis has been provided estimating the costs and relative benefits of beaver dam removal.

FINANCIAL SUMMARY

The budget for 1992/3 was $440,000. The expenditures for the year were $445,041, an over expenditure of $5041 (Table 1).

The financial goals of this program are to keep administrative costs to a minimum and to eventually use at least 50% of the budget for enhancement projects. Each year the program moves closer to this goal. However, as stated in the management plan many of the initial enhancement projects will be in the form of "pilot projects". Very little information is available on fish enhancement activities in northern areas, therefore it is necessary to conduct pre and post enhancement evaluations to determine the value and impacts of our activities. Once these evaluations are completed future projects should require minimal evaluafions. At this stage in the program many of the enhancements have extensive pre (inventory) and post (evaluation) enhancement components.

1992/93 PEACE/WILLISTON COMPENSATION PROGRAM FINANCIAL SUMMARY

Project	Project Cost	Labour Cost	Administration	Planning	Inventory & Assessment	Enhancement	Evaluation	Public Cons
Basic Operations								
Salaries MOE	55377							
Salaries BCH	120000							
Office Lease	15000		15000					
Vehicle Lease	14000			700	4200	4200	4200	700
Administration	8000	57149	37332	21868	5949			
Equipment	9925		993		2978	2977	2977	
Report Preparation	307	18950		7580	11677			
Public Consultation	8919	16491						25410
Travel MOE	7300			2920	1460	1460	730	730
Travel BCH	16000			1600	4800	4800	3200	1600
Methods Development								
Kokanee Model	21000	218	65		21153			
Dinosaur Lake	5750	0			5750			
Grayling Review	8000	2453	736		9717			
Embayment Study	6010	334	100		6244			
Enhancements								
Stocking	6633	1239				7872		
Grayling Transplant	4821	10009				14830		
Summit Lake	1338	0					1338	
Dina Creek	8102	5671			2754	11019		
Windy Point Lake	14935	9257			2987	21205		
Stream Fertilisation	77851	11293				89144		
Carbon Side Channel	0	7469				4481	2988	
Gantahaz Lake	3675	2713					1917	4471
Inventory and Assessment								
Manson River	0	117			117			
Tomias & Carina Lakes	4599	1827			6426			
Small Lakes	3780	23971			19427			8324
Carbon / Dunlevy	0	6217						6217
Gething Creek	5130	0			5130			
Moberly River	16588	0			16588			
Pine River	0	0			0			
Cameron River	2000	0			2000			
Total Cost	**445041**		**54226**	**34668**	**129357**	**161988**	**17350**	**47452**
Percent			**12%**	**8%**	**29%**	**36%**	**4%**	**11%**